Department of Horticulture

Purdue University Cooperative Extension Service • West Lafayette, IN

Growing Cucumbers, Melons, Squash, Pumpkins and Gourds

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Cucurbits, which include cucumbers, muskmelons, watermelons, pumpkins, summer squash, winter squash, and gourds, are some of the most popular garden vegetables planted today. Cucurbit crops are similar in their appearance and requirements for growth. They are prostrate, sprawling vines, usually with tendrils. Each vine bears many large, lobed leaves. On all cucurbits, except for the bottle gourd, the flowers are bright yellow. Each vine bears two kinds of flowers: pistillate (female) and staminate (male).

Cucurbits are warm season crops which grow best during periods of warm nights and warm days. New dwarf and/or bush types enable gardeners with limited space to enjoy the fresh home grown taste of cucumbers, watermelons, and squash. Although traditional cucurbit types require substantial growing space, they can still be grown in small gardens by training vines onto vertical structures that conserve garden space.

Site

Cucurbits require full sun to grow well. Plant them in well-drained, neutral or slightly alkaline soil with a pH of 7.0. Soil types that contain clay can be improved by adding organic matter. Peat, compost or rotted manure can be added to improve heavier soils. Light, sandy soils are preferred for northern gardens, as they warm quickly in the spring.

For good growth, work fresh animal manure or a cover crop into the soil in the fall, or well-rotted manure or compost into the soil before planting. Spread the organic matter to a depth of 2 inches and work it into the soil 6-8 inches deep. If limited organic matter is available, concentrate it in the area where the seed is expected to be planted.

If you are unsure of the fertility of your soil, get a soil test. This will inform you of nutrients that are present in the soil, as well as the soil pH. Contact your county extension educator for information on soil testing.

Fertilization

Cucurbits require low nitrogen and high potassium and phosphorous for good fruit development. Add a complete fertilizer such as 4-8-5 or 6-10-10 or similar analysis at a rate of 1 to 2 tablespoons per hill prior to planting. Nitrogen is readily leached from light, sandy soils. Ensure an adequate nitrogen supply by side-dressing with ammonium nitrate (33-0-0) or similar analysis at the rate of 1 tablespoon per hill 1 week after blossoming begins. Make a second application 3 weeks later.

Do not over fertilize with nitrogen as this encourages vine growth and retards fruiting. Bush, dwarf, and short-vined plants do not need as much fertilizer as standard types.

Saving Seed

Saving seeds is not recommended because many of today's plants are hybrids. Pumpkins, squash, and ornamental gourds can cross-pollinate. The seeds planted from normal-appearing fruit can produce plants which bear fruit that is misshapen and undesirable. Plan to purchase seed each year. Grow cultivars that are recommended for your area.

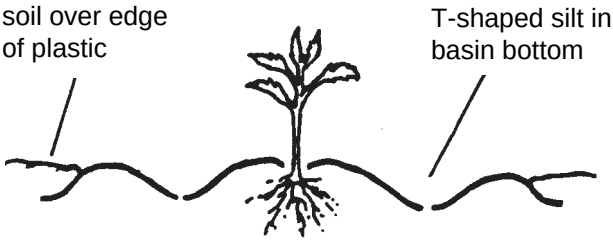
Planting

Plant cucurbits after all danger of frost has passed and when the soil has warmed to 60°F. The last spring frost dates will vary in different locations around the state.

Seeds

Cucurbit seeds require very warm soil to germinate, at least 60°F. Seeds will rot if the temperatures are under 60°F. Dust seed with thiram or captan before planting to help prevent disease. If the seeds are colored, they have already been treated. Soils can be warmed to get a head start on the growing season. Methods used to warm the soil include the use of black plastic and the practice of

mounding or hilling the soil. Lay black plastic on the soil surface as early as possible in the spring. To plant cucurbit seeds or transplants, simply slit the plastic in the area where you want the plants located. Follow the normal planting procedure.



Install plastic anytime prior to planting. Mound the soil and form a 3-6 inch trench around the mound. Place the plastic cover over the mound. Edges of the plastic should fall into the trench. Fill in the trench with soil to cover the edges of the plastic and hold it in place.

To form a hill, mound soil to make a low, broad hill about 8-10 inches high. Plant 4-6 seeds in a circle in 5 inch intervals for each hill. Each hill should be 4-8 feet apart, depending on the variety you select.

Plant cucurbit seeds 1 inch deep. Cover and lightly tamp the soil but not so firmly as to create a crust.

Thin when seedlings have 2 or 3 leaves. Remove all but 2-3 large, healthy, well-spaced plants per hill. More than 3 plants per hill will lead to crowding, greater chance of disease, and lower yields.

Transplants

When purchasing transplants, look for stocky plants free of diseases, pests, and yellow leaves, which are a sign of stress. Transplant cucurbits when plants have developed two adult or “true” leaves.

Purchase transplants in individual peat pots or containers, rather than unsectioned flats. This prevents roots from being disturbed in the transplant process. If you sow seeds to be transplanted outside at a later time, plant 2 seeds per peat pot, peat pellet or individualized pot. When they are 2 inches tall, thin to one strong plant. Two to three weeks are needed for seedlings to grow to transplant size.

Set plants out during the late afternoon or early evening, when the wind has died down, to avoid stress from the hot summer sun. First, make the rows as you would for seed or prepared hills. Then dig a hole for each plant roughly twice as wide and twice as deep as the soil ball. Keep in mind the proper planting distance as noted earlier.

Next, set each plant slightly deeper than it grew before; place soil around the roots; and add 1 cup of starter solution to help roots become established. Make starter solution by dissolving 1 tablespoon of water soluble, high phosphate fertilizer, such as 10-52-17 or 11-48-0 or similar analysis, in a gallon of water. Finish by filling the hole with soil, leaving a small basin around each plant.

Often, the lip of the peat pot acts like a wick, allowing the moisture to escape from the pot. Therefore, be sure to tear or break down the lip and cover it with soil. In sandy soil, the peat pot should be carefully removed.

If the next 2-3 days are sunny, cover the new transplants with newspaper “tents” to prevent wilting. Water as needed, and water thoroughly each time.

Watering

Cucurbits are deeply rooted, so water slowly with 1 inch of water per week. Allow it to completely soak the soil 6-8 inches deep. Water in the morning or early afternoon so the foliage dries by evening. This helps prevent the spread of leaf diseases. Decrease watering later in the season to encourage fruit to mature. At this time, the root systems will be more extensive and able to withstand drier conditions.

Furrow irrigation is best, but soaker hoses also work well. Overhead sprinklers can be used although wet foliage increases the chance of disease.

Weed Control

If planting is done in a well-prepared seedbed, weeds will seldom be a problem and can be controlled by hand-weeding or hoeing. Continue to remove weeds until the vines cover the ground. At this time, the dense foliage will shade out weeds.

Black plastic mulch is very effective when used with cucurbits because it absorbs heat, warms the soil, and maintains good soil moisture levels. The plastic can be installed when the soil is in good planting condition, any time from a few days to 2-3 weeks before planting. This will speed harvest since the soil will be very warm when the seeds and transplants are planted.

If you do not use plastic, cucurbits will benefit from organic mulches applied in the summer after the soil has warmed. Apply peat moss, compost, untreated lawn clippings or weathered straw to a depth of three inches.

When summer mulching materials are used, such as straw or peat moss, additional nitrogen is recommended. Mix 1 tablespoon of ammonium sulfate, calcium nitrate, or nitrate of soda per 1 bushel of mulch. Apply once or twice during the early growing season. A complete fertilizer that is high in nitrogen may be substituted for any one of the above. Apply the fertilizer when the mulch

is moist.

Insects and Diseases

Cucurbits require regular spray programs to prevent insect and disease organisms from reducing yields or killing plants. Contact your local county extension office for insect and disease control recommendations.

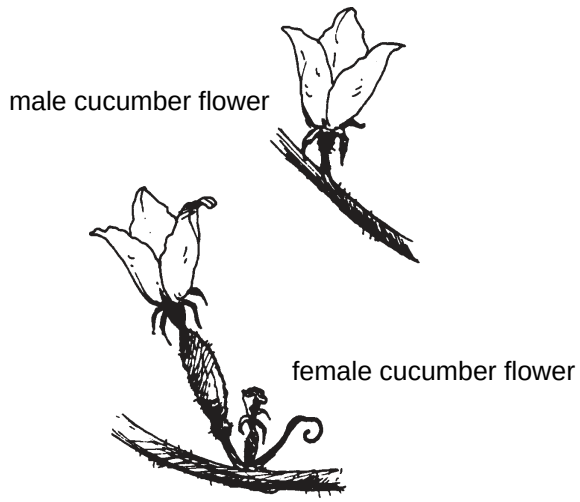
Crop Rotation

Rotation is the practice of changing the location of vegetable crops in a garden each year. Cucurbits are generally attacked by the same pests so they should be rotated on a 3 year schedule. An example might be to grow muskmelon the first year, then grow tomatoes in the same location the second year, and beans the third year. This can then be repeated. Rotate cucurbits on a 3 year schedule with any vegetable other than those from the cucurbit family.

Pollination

Insecticides should be used in late afternoon or early evening to avoid injury to pollinating bees.

The first flowers that appear on cucurbits are usually male. Male blossoms do not bear an immature fruit or ovary directly behind the petals as do female flowers. They furnish pollen for bees to pollinate the female flowers, and then drop off the plant naturally without fruit production. The female flowers have an ovary directly behind the flower, which looks like a tiny fruit. When pollinated, it swells to form a fruit.



If the female flowers bloom before there are male flowers to supply pollen, they will dry up or produce small fruits that drop off and die.

If cucumbers tend to be misshapen, it is due to incomplete pollination. The next fruits will probably be the proper shape.

Specific Information

Muskmelons and Other Melons

Muskmelon is a popular fruit that is eaten fresh or can be frozen. Muskmelon is frequently called cantaloupe. However, the true cantaloupe has a hard, rough, warty, or scaly rind and is not commercially available. Muskmelons have orange flesh and a netted rind.

Other melons include casaba, honeydew, Christmas and Persian melon. Honeydew fruit is large and mildly scented. The flesh is crisp and white or green in color; the rind is smooth. Casaba is similar, except it has a wrinkled rind. Persian is similar to muskmelon, but the fruit is larger. Christmas melon has lightly colored flesh. The fruit is oblong with green and yellow stripes. To grow muskmelon, choose early cultivars for direct sowing outdoors, or start main and late season cultivars indoors to insure adequate time for melons to ripen.

Harvest muskmelon early in the day, after the plants are dry. Be careful not to damage the vines. Pick melons every other day at the start of the season and every day at peak season. At maturity, the stem appears cracked at the point of attachment to the fruit. Check for maturity by gently lifting the melon. If it is ripe it should easily separate from the vine. When ripe, the muskmelon rind changes from green to tan or yellow between the netting.

To harvest Casaba and honeydew, cut them off the vine after they turn completely yellow. They will continue to ripen (become soft and mellow) if kept at room temperature for a few days. When they are completely ripe, the blossom end yields to pressure.

Persian melons are ripe when they have a sweet, fruity aroma at the blossom end. If melons are not yet ripe in September and a hard frost is predicted, cover the foliage and immature fruit with newspaper.

Problems—Muskmelons may crack during periods of high humidity which is common during the summer's rainy period.

Poor flavor and/or smooth rind is due to cool temperatures; wet, cloudy weather; poorly adapted cultivars; poor soil fertility (especially low potassium) and picking the melons before they are ripe.

Herbicide drift can cause leaves to appear mottled and discolored. Check if herbicides have been sprayed the last 10-14 days. If herbicides are not the cause, viruses can show similar symptoms.

Cucumbers

Choose cucumber cultivars according to their intended use. Slicing cucumbers (6-8 inches), pickling cucumbers (2-6 inches), burpless cucumbers (6-15) and novelty cultivars are available. For small gardens, use trellis, wire cages, or bush types such as Patio Pik or Pot Luck.

Planting, fertilization, and other problems are similar to other cucurbits. Refer to general information on cucurbits.

Summer Squash

Summer squash is available in many different shapes and colors. Popular types include scallop or patty pan types (green or white); crookneck or straight neck (usually yellow with a constricted neck); and Italian marrows (club shaped such as zucchini, cocozell and caserta).

Bush types are available for small gardens.

Follow the general planting, fertilization, and care as outlined for cucurbits.

Harvest zucchinis when they are 2 inches in diameter or 6-10 inches long. Pick yellow types at 4-7 inches and patty pan or scallop types when they are 3-5 inches in diameter. They are usually ready to pick 4-8 days after flowering.

Winter Squash

Winter squash can be stored in a cool dry area for many months. They are available in many shapes, colors, and sizes. Small types (14 pounds) include acorn, butternut, and buttercup. Intermediate (6-12 pounds) and large (15-40 pounds) include banana and hubbard. There are a few bush types for small gardens.

Follow the general planting, fertilization, and care as outlined for cucurbits.

Harvest winter squash when stems are greyish and starting to shrivel. Spaghetti squash should turn a golden yellow and banana squash a golden orange when ready to harvest. Cold weather increases the sugar content of winter squash; so if a frost is expected, cover the fruit and vines with newspaper.

Pumpkins

Pumpkins are available in several sizes: small (4-6 pounds), for cooking and pies; medium (8-15 pounds) and large (15-25 pounds), for cooking and jack-o-lanterns; and jumbo (50-100 pounds), for showing at fairs and exhibits. There are also naked seeded or hull-less cultivars for roasting seed. Bush and semi-vining cultivars are used for small gardens.

Follow the general guidelines for planting and maintenance of cucurbits for growing pumpkins.

Pumpkins should be harvested when they have a deep, solid color and the rind is hard. The vines will usually be dying back at this time. Cover during a light frost and avoid leaving pumpkins out during a hard frost to prevent softening.

Watermelons

Watermelons require a long growing season. Gardeners in northern Indiana should choose early cultivars and use transplants. If you grow seedless melons, you must plant a row of a standard seeded cultivar alongside for pollination. Watermelon fruit may be large (20-30 pounds), medium (10-15 pounds), or small (5 pounds). In small gardens, use bush types. The larger the fruit the longer the growing season.

Follow the general guidelines for cucurbits when growing watermelons.

Use a combination of the following four indicators to determine when watermelons are ripe:

1. The light green, curly tendrils on the stem near the point of attachment turn brown and dry. Some varieties may do this 5-10 days before the fruit is fully ripe.

2. The surface color of the fruit loses its slick appearance and turns dull.

3. The skin becomes rough and you can penetrate it with your thumbnail.

4. The cultivars that are predominantly dark green will turn a buttery yellow on the ground side. Lighter melons will also turn yellow, but not as deep as darker melons.

Gourds

The gourds most commonly grown belong to two genera: Cucurbita and Lagenaria.

The Cucurbita types are the most common, as they are the most colorful and contain unusual shapes. The surface may be smooth or warty, plain or colored, and sometimes ridged, or with stripes. In the *C. pepe* var. *ovifera,* there are several shape variations such as the apple, bell, egg, or pear. Colors may be orange or bicolor.

The Lagenaria types are commonly called the bottle or dipper gourds. The fruit may be smooth, knobby or ridged. Some are only three inches long, while others may be more than three feet long. Shapes vary from globe, dish, bottle, dumbbell, club, crookneck, or coiled.

Planting, fertilizing, and care are similar to other cucurbits. Fruits of gourds are picked for eating about 1 week after flowering.

Harvest gourds before frost except for the Luffa or sponge gourd. Luffa should be left on the vines until mature or the vines are killed by frost. To prepare a sponge from the luffa gourds, peel the brown skin from the fibrous interior. It will separate quite readily if the fibrous interior is still moist. After peeling, remove the seeds by shaking, then wash the “sponge” in warm, soapy water. If the fibers are to be whitened, place the sponge in a solution of bleach, rinse, and dry in the sun. It can be used as is or moistened and dried again between papers with weights on top.

**This publication was originally authored by Juliann Chamberlain.*

For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.

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